Fairfield Industries, Inc.
FCC Form 442
Exhibit 1
Questions 4, 10, 13

PUBLIC INTEREST EXHIBIT

Fairfield Industries, Inc., headquartered in Houston, Texas, is engaged in all phases of geophysical exploration for oil and gas. This includes data acquisition; data processing; and design, development and manufacture of data acquisition equipment.

Fairfield's customers include major and independent oil and gas producers, much of the work being conducted overseas for foreign oil producers and Governments. This work has occurred (or is occurring) in countries such as Indonesia, Venezuela, the Middle East and China.

Fairfield has developed a new line of equipment capable of operating over the frequency range 214-234 MHz as desired by its foreign clients. By this application, Fairfield requests a modification of its current experimental license for the band 216-222 MHz so as to test this equipment (one to three systems at any given time) prior to export to foreign entities. In support Fairfield submits the following:

BACKGROUND

Geophysical exploration involves the simultaneous transmission of seismic data from numerous locations to a central receiver and digital recording unit. A sound source (such as a small dynamite charge) is used to introduce seismic energy into the earth's surface. The reflected energy is picked up by geophones/hydrophones, and the data is then transmitted either via cable or radio to a central receiving unit.

With older, cable-based methods each individual geophone must be hard-wired to the recorder. Given that 1500 or more geophone groups may be deployed for any one "shot", the testing process is slow, cumbersome, and expensive. Moreover, the scope of the area which can be tested is often severely restricted.

By contrast, with radio telemetry there is no need to wire each sensor to the receiver. More sensors can be deployed over a wider area thus improving the quantity and quality of the data, and at less cost.

Radio-based telemetry is also more environmentally protective. Much less crew movement is required than with wired techniques -- an important factor in environmentally sensitive areas such as tidal wetlands.

The heart of a radio telemetry system is the transmitters. Just prior to a shot, the transmitters are activated by a tone signal from a command module; the units then simultaneously transmit low-power narrowband signals to a high gain Yagi antenna mounted at a very sensitive receiver. The data is transmitted in short bursts, measured in seconds. The signal passes to a multiple channel mainframe and demodulator and from there to a digital recorder and tape transport.

Each seismic transmitter operates on a separate frequency with low power (less than 1 watt) and an effective antenna height of six feet or less. The transmitters employ non-directional antennas directly attached to their respective unit.

During the course of a typical operation, the transmitters are moved from point to point along surveyed lines normally several miles in length. When data has been collected in one area, the entire system is moved to the next survey line where the process is repeated.

It is essential that geophysical transmitters be rugged and readily portable. In land operations, for example, each member of an exploration crew typically backpacks three or four units at one time. In operations offshore, similar considerations of portability and durability apply. In order to achieve these characteristics, each transmitter and its battery must be kept as small and as light-weight as possible. One result is the very low output power mentioned above.

Due to the sensitivity of the receiving unit and the need for accurate, uncontaminated data, geophysical operations are especially vulnerable to interference. A possibility of interference normally results in the elimination of three channels: The channel on which interference is detected as well as the two adjacent channels. For this reason, standard operating procedures require that the spectrum be monitored before operations are begun in any given area in order to ensure the absence of interfering signals. Equipment capable of operating over a wider frequency range minimizes the risk of interference, while maximizing the number of usable channels -- an especially important consideration as discussed below.

Although radio telemetry represents a significant improvement over older methods of geophysical research, the data collected has been generally two-dimensional ("2D"). Such data is useful, but has serious limitations in its ability to reveal undiscovered reserves of oil and gas -- particularly pockets which may exist along fault lines in already-established or supposedly depleted fields.

Fairfield has been a leader in the development of three dimensional (or "3D") survey techniques for shallow offshore waters of up to 100-foot depths. Where 2D methods might entail a survey grid with quarter-mile or even half-mile intersecting lines,

a 3D survey by contrast, might have spacings as low as 110 feet resulting in a much higher level of subsurface resolution.

The enhanced resolution of 3D seismic surveys is such that dramatic improvement have been obtained in the rate at which successful wells are drilled; hence 3D data, while more expensive than 2D, is an important means of reducing the risks associated with dry holes. Indeed, one major U.S. producer has reported a 63 percent improvement in the rate at which it is drilling successful wells using 3D (the success rate using 2D data can be only 15-20 percent). With the search for oil and gas now often involving deep wells of 20,000 feet-plus -- each of which can cost on the order of $20 million -- 3D is becoming an essential risk control measure.

In the past Fairfield's equipment has been able to collect data from two or four geophones/hydrophones (two/four "traces") per radio channel. The equipment Fairfield seeks by this application to test is capable of eight traces per channel. Given the number of channels available for geophysical exploration in many foreign countries, i.e. as many as 1000 channels (20 MHz ÷ 20 kHz per channel), Fairfield's equipment will enable greatly increased subsurface resolution. This in turn will mean more efficient surveys with exploration crews spending less time in the field at less cost.

However, prior to shipment, Fairfield must test its equipment. Since many of its customers are foreign Governments or producers which have available to them the entire band from 214-234 MHz, it is essential that Fairfield be able to test out and verify its equipment over that range. Under the circumstances, it clearly is in the public interest to grant this application.

THE PUBLIC INTEREST WILL BE SERVED BY GRANTING FAIRFIELD'S QUESTION

A review of the facts presented above compels the conclusion that the public interest would be served by a grant of Fairfield's request.

A. A Grant of this Application Is Consistent with Congressional Mandates.

The Commission is charged with maximizing the efficient and effective use of the radio spectrum. Section 303(g) of the Communications Act prescribes that the agency "shall .... [s]tudy new uses for radio, provide for experimental uses of frequencies, and generally encourage the larger and more effective use of radio in the public interest." Moreover, in Section 7 of the Act, Congress has directed the agency to give priority to proposals for new technologies and services -- the burden being placed on opponents of such a proposal to demonstrate that it would be inconsistent with the public interest. 47 U.S.C. § 157.

Fairfield's Petition is entirely consistent with the thrust of Sections 7 and 303(g). First of all, it facilitates further improvements in the use of the spectrum for low power telemetry purposes. Second, it will directly facilitate the efforts of a small U.S. company to compete and sell its product in the global marketplace; this in turn contributes to a positive balance of trade for the U.S.

B. Modification of the Experimental License Entails No Risks for Other Users.

Grant of this application entails no risk of interference to other users, Government users included. On the contrary, if there be any risk, it is to Fairfield. There are multiple reasons for this:

First. Fairfield's telemetry units operate with less than 1 watt with omnidirectional antennas attached directly to the sonobuoy or sensor.

Second. Seismic telemetry is self-policing.

Third. Fairfield's testing is typically conducted in remote, uninhabited areas, such as offshore waters, swamps and marshes. The testing contemplated here would be conducted primarily in southeastern Texas and Louisiana.

Fourth. In the 20-plus years that Fairfield has been manufacturing seismic equipment, there has not, to Fairfield's knowledge, been a single complaint concerning operation of its equipment in the 216-220 MHz band.

CONCLUSION

For the foregoing reasons, Fairfield submits that the public interest will clearly be served by a grant of this application.